

# MAT 121: Probability and Statistics for the Liberal Arts I

Fall 2013

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**Mathematical Prerequisites and Restrictions:** MAT 121 has no formal prerequisites; however, it is desirable that students have a reasonable level of competence in high school algebra. MAT 121 is a prerequisite for MAT 122. A student cannot receive credit for MAT 121 after completing STT 101 or any MAT course numbered above 180 with a grade of C or better.

MAT 121 and the Liberal Arts Core: The sequence MAT 121 – MAT 122 can be used to satisfy the quantitative skills requirement of the liberal arts core in the College of Arts and Sciences.

**Texts:** Elementary Statistics with Finite Mathematics, Custom Edition for Syracuse University, Math 121 & 122 (taken from “Elementary Statistics” by Mario F. Triola, 12<sup>th</sup> edition and “Finite Mathematics” by Lial, Greenwell, and Ritchey, 10<sup>th</sup> edition) and the Minitab Manual that goes with the 12<sup>th</sup> edition of “Elementary Statistics” (Triola).

**Homework:** Homework is for your practice. It will not be handed in; it will not be graded. Page 4 of the syllabus contains suggested problems for each section. It is also a good idea to try the statistical literacy and critical thinking, chapter quick quiz, and review exercises at the end of each chapter.

**Quizzes:** Quizzes will be given in class most weeks when there are not exams. Students will know of upcoming quizzes at least one class period in advance. There are no make-up quizzes.

**Computer Labs:** Labs will be completed during scheduled class time. Please bring your textbook, laboratory manual, and calculator.

**Exams:** All exams (including the final exam) are open book. Students may use their textbooks as well as any other books or notes they wish. Students may use any type of calculator they wish except that they may not use calculators capable of wireless communication. Cell phones or any other device capable of wireless communication are not allowed.

**Exam Dates:**

Exam 1	Monday, 16 September
Exam 2	Wednesday, 16 October
Exam 3	Monday, 11 November
Exam 4	Wednesday, 4 December

**Make-up Exams:** Make-up exams will be given only in very exceptional circumstances. In most cases instead of a make-up exam the final exam will be counted extra. In either case, the student must convince the instructor that there is a very good reason for missing the exam.

**Final Exam:** The final exam will be given during class time on December 9, 5:15-7:15. The final exam will not be given at any other time. Therefore, do not make plans to leave campus before this time.

**Calculation of Course Grade:** Each midterm exam and the final exam will be graded on a scale of 0–100. Your overall score for the term is then computed by the following formula. Overall score = (.15)(test 1) + (.15)(test 2) + (.15)(test 3) + (.15)(test 4) + (.20)(final exam) + (.10)(average of lab scores) + (.10)(average of quiz scores). Your letter grade for the term then comes from the following table.

Overall score x	Letter Grade	Overall score x	Letter Grade
0<=x<60	F	80<=x<83	B-
60<=x<70	D	83<=x<86	B
70<=x<73	C-	86<=x<90	B+
73<=x<76	C	90<=x<93	A-
76<=x<80	C+	93<=x<=100	A

**Calculator:** Your calculator should be able to take square roots. The Texas Instruments TI-83 or TI-84 is *strongly* recommended, but not required. Cell phone calculators are forbidden.

**Students with disabilities.** If you believe that you need accommodations for a disability, please contact the Office of Disability Services(ODS), <http://disabilityservices.syr.edu>, located in Room 309 of 804 University Avenue, or call (315) 443-4498 for an appointment to discuss your needs and the process for requesting accommodations. ODS is responsible for coordinating disability-related accommodations and will issue students with documented Disabilities Accommodation Authorization Letters, as appropriate. Since accommodations may require early planning and generally are not provided retroactively, please contact ODS as soon as possible.

Related link: <http://disabilityservices.syr.edu/faculty-staff/syllabus-statement/>

**Learning Outcomes:** Completing MAT 121 will provide the student with the following.

- A basic understanding of the notions fundamental to the use of statistics as a tool for understanding decision-making. These notions include the description of data (pictorially and numerically), frequency distributions, probability, some classical probability distributions (binomial, normal, Student -t, Chi-square), and confidence interval estimates.
- Facility in naming, computing, and interpreting the various numeric quantities associated with the notions mentioned above. These quantities include several population parameters and sample statistics, notably measures of central tendency (mean, median, mode) and measures of spread (range, standard deviation and variance). They also include measures of position (percentiles and z-scores), probabilities, point estimates, and margins of error.
- A foundation for the further study of statistical inference (for example, MAT 122).
- Practical experience with statistical computer software (Minitab).

**Religious observances policy.** SU religious observances policy recognizes the diversity of faiths represented among the campus community and protects the rights of students, faculty, and staff to observe religious holidays according to their tradition. Under the policy, students are provided an opportunity to make up any examination, study, or work requirements that may be missed due to are religious observance provided they notify their instructors before the end of the second week of classes. For fall and spring semesters, an online notification process is available through MySlice (Student Services -> Enrollment -> My Religious Observances) from the first day of class until the end of the second week of class.

Related link: [http://supolicies.syr.edu/studs/religious\\_observance.htm](http://supolicies.syr.edu/studs/religious_observance.htm)

**Academic Integrity** Syracuse University sets high standards for academic integrity. Those standards are supported and enforced by students, including those who serve as academic integrity hearing panel members and hearing officers. The presumptive sanction for a first offense is course failure, accompanied by the transcript notation "Violation of the Academic Integrity Policy". The standard sanction for a first offense by graduate students is suspension or expulsion. Students should review the Office of Academic Integrity online resource "Twenty Questions and Answers About the Syracuse University Academic Integrity Policy" and confer with instructors about course-specific citation methods, permitted collaboration (if any), and rules for examinations. The Policy also governs the veracity of signatures on attendance sheets and other verification of participation in class activities. Additional guidance for students can be found in the Office of Academic Integrity resource: "What does academic integrity mean?"

Related links:

The Academic Integrity Policy: <http://academicintegrity.syr.edu/academic-integrity-policy/>

Twenty Questions and Answers about the Academic Integrity Policy: <http://academicintegrity.syr.edu/faculty-resources/>

What does academic integrity mean?: <http://academicintegrity.syr.edu/what-does-academic-integrity-mean/>

## Suggested Homework Problems

1-2: 1-25 odd

1-3: 1-31 odd

1-4: 1-27 odd

2-2: 1-21 odd, 29

2-3: 1-13 odd

2-4: 1-25 odd

3-2: 1-23 odd, 29, 31, 33

3-3: 1-23 odd, 29-35 odd

3-4: 1-29 odd

4-2: 1-39 odd

4-3: 1-39 odd

4-4: 1-29 odd

4-5: 1-29 odd

4-7: 1-35 odd

5-2: 1-29 odd

5-3: 1-43 odd

5-4: 1-19 odd

6-2: 1-51 odd

6-3: 1-31 odd

6-4: 9, 13, 19

6-5: 1-19 odd

6-6: 1-31 odd

7-2: 1-43 odd

7-3: 1-27 odd, 31-35 odd

7-4: 1-29 odd

7-5: 1-23 odd

# Learning outcomes, Help, and Tips

## Learning outcomes

For all Math courses:

- Students will be able to use and understand the usage of mathematical notation
- Students will be able to select an appropriate mathematical model for a given real world problem
- Students will be able to do hand calculations accurately and appropriately
- Students will be able to do calculations with the aid of appropriate hardware and/or software

For all Math courses MAT 275, 295 and above:

- Students will understand the nature and role of deductive reasoning in mathematics
- Students will be able to follow proofs and other mathematical discourse
- Students will be able to write simple proofs in the major proof formats (direct, indirect, inductive), and, more generally, to engage in mathematical discourse
- Students will be able to apprehend and enunciate the limitations of conclusions drawn from mathematical models

For all Math majors:

- Students will have a basic knowledge of the contributions and significance of important historical figures in mathematics
- Students will have a basic knowledge of the major modern theories of analysis, abstract algebra, geometry, and applied mathematics
- Students will be able to effectively use mathematical word processing software
- Students will have a basic understanding of career options available to mathematics majors
- Students will be able to locate and use sources and tools that aid mathematical scholarship

## Getting help

Your instructor and recitation instructor will be holding regular office hours and will make appointments with students having class conflicts with their scheduled office hours. In addition, the Mathematics Department offers regular math clinics. These will be set up by the second week of the semester and a schedule of the clinics will be posted outside the math office and on the department's website.

## How to succeed

Here are a few basic suggestions for how to succeed in this course.

1. It is absolutely essential that you understand how to solve the assigned homework problems and, more importantly, how and why the skills and techniques presented in the course are used in solving the assigned problems. Quiz and exam questions will be similar to these problems.
2. Ask questions in lecture, recitation and/or at the clinic about anything that is not completely clear. Don't hesitate to bring questions to your instructors during office hours.
3. Every day, read and study the sections in the textbook covered in the lecture. Learning mathematics takes time! Read carefully and work through all the examples in complete detail. It can be helpful to try to work through an example on your own before reading the solution.
4. Stay caught up. Mathematical concepts build on each other cumulatively and you need to stay on top of the material at every stage. If you are having difficulty, don't expect that the problem will take care of itself and disappear later. Contact your course instructor or your recitation instructor immediately and discuss the problem!
5. Form a study group. Many students benefit from a study group to work through challenging problems and to review for exams. You should attempt the problems ahead of time by yourself and then work through any difficulties with your study partners. Explaining your reasoning to another student can help to clarify your own understanding.
6. You should expect to work hard. Don't get discouraged if you find some of the material very difficult. Be persistent and patient! If you follow the above suggestions, your experience in this course will be a rewarding one.